

lowed by exposure in glycerine to diffused light, enables us to isolate the layers composed of the nervous terminal plexus alone. We see the spaces of the meshes of this plexus colored black by the silver precipitate, while the nervous fibres which form the rounded, or polygrual meshes, remain uncolored, and appear in relief, thanks to their refractile power. Here and there the meshes are dotted with clear stellate bodies, with numerous ramifying branches, that are only the extremities of the pale fibres that plunge into the plexus, and form part of the terminal nervous plate. Here the nervous fibres lose their envelopes, and are constituted only of naked cylinder axes, the elements of which separate to form the plexus. This, in its appearance as a whole, bears a great resemblance to that of a leaf, deprived of its parenchyma by maceration.

"As to the terminations in button-like enlargements, seen by M. Ranvier, we can also see them as well in nitrate of silver preparations as in those treated with gold chloride alone, without previous use of osmic acid. But we have, in these cases, to do with defective preparations, in which the continuity of the meshes is interrupted; in case of the negative images obtained by silver nitrate, by an excess of silver precipitate which obscures a part of the filaments of the plexus; in chloride of gold preparations, by an insufficient metallic deposit, stopping at the first branches of bifurcation of the terminal pale fibres, or coloring the filaments of the plexus only in an irregular and incomplete manner.

"I intend to show, in a future communication, that the nervous lamellae, formed by the terminal plexus, are alone, of all the elements forming the electric organ of the torpedo, the ones that accomplish the transformation of a force of tension into active force, the transformation of neurility into electricity."

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THE NERVE TUBES IN T, AND THEIR RELATIONS WITH THE GANGLION CELLS.—M. L. RANVIER. *C. R. Acad. des Science*, Dec. 20, 1875. (Abstr. in *Revue des Sci. Med.*)

If we make an interstitial injection of osmic acid solution, by means of a Pravaz syringe, with a gold canula into the vertebral and gasserian ganglia of an adult rabbit, killed by hemorrhage, the ganglia immediately become black. They are next removed, placed in slightly iodized serum, and separated by means of needles at the end of twenty-four to forty-eight hours.

We then see that the nerve cells of these ganglia are unipolar, but the nerve tube which arises from each of these, after a longer or shorter course reaches one of the nerve tubes of the posterior root and unites with it at one of its annular constrictions.

The tubes which leave the ganglion cells are smooth ones. By joining the large nerve tubes of the posterior roots, they form a fibre bifurcated in a T or V. But all the fibres in T do not have a smooth branch; consequently, they are not all the result of a fusion of a fibre from the ganglion cells with an ordinary nerve tube. These Vs, with three large branches are therefore, probably formed by the anastomosis of several fibres, that have only a distant connection with the cell, and which have, therefore, taken on the aspect of ordinary nerve tubes.

The direct inference from these facts is as follows: If a nerve filament, arising from a ganglion cell unites itself with and is merged into another nerve tube at one of its annular constrictions, it becomes impossible to tell in what sense the impulse comes to it, and in which direction it is transmitted; it is, moreover, impossible to maintain the view that the ganglion cell is a motor or sensory centre, receiving a sensory impression or sending a motor impulse, by a simple conducting filament going toward the periphery.

THE PHYSIOLOGY OF THE FIFTH NERVE.—M. Fr. Legrand, *Thèse de Paris*, 1875. (Abstr. in *Rev. des Sci. Méd.*)

After a short *résumé* of the anatomical distribution of the trigeminus, the author rapidly traces the history of the successive phases of the physiology of this nerve, from the beginning of the century. Then, and this is the original and important portion of his memoir, he gives the account of two cases of fracture of the base of the cranium, followed by cure, but with complete paralysis of the fifth pair; one on the right and the other on the left side, and after an analysis of the symptoms, he offers physiological considerations of which the following are the more important ones.

*Sensibility.* In one of the cases no sensation was experienced when an Itard sound was introduced into the eustachian tube. Notwithstanding, Louget has excluded the eustachian tube from the parts innervated by the fifth nerve; this observation shows sufficiently that, as is admitted by anatomists to-day, the tube is supplied by the nerve of Bock, an afferent branch of Meckel's ganglion. (In the other case, this mucous membrane was still sensible, but in this the paralysis was not absolute, as the sensibility was still retained in the gingival mucous membrane and in the uvula.) One of the patients had keratitis conjoined with iritis; a condition ordinarily complicated with intense photophobia. In this case the absolute lack of photophobia coinciding with the paralysis of the fifth nerve, shows plainly that photophobia has its point of departure in the corneal nerves, and that in this membrane, as has been noticed by Cl. Bernard, the nerves of general sensibility are influenced by the special agent light.

*Motricity.* We find in M. Legrand's memoir many interesting considerations on the innervation of the anterior belly of the digastric and the mylo-hyoid by the motor root of the trigeminus. We will notice more particularly the facts relative to the velum palati, which the author says was less stretched to the right. We know that the external peristaphyline muscle, the tensor of the velum, receives its motor branch from the otic ganglion; but this ganglion possesses motor fibres from two sources, the facial and the third division of the trigeminus. The paralysis of this muscle shows that its motor root comes from the trigeminus. We may mention here also that some considerations lead the author to omit the hypothesis that paralysis of the trigeminus may cause loss of tenacity in muscles innervated by the facial.